Claims

[1] 1. A repair or reinforcement system of an existing structure using a reaction force of pressurizing means, comprising:
a ground including an existing foundation structure having a hole;
a pressure bearing body separately installed in the vicinity of a target portion for repair or reinforcement of the existing structure or being the existing structure itself;
structure supporting means for supporting the existing structure between the ground and the pressure bearing body; and
pressurizing means for exerting an artificial pressure on the pressure bearing body in a state in which one end thereof is supported on an upper end of the structure supporting means, to press fit the structure supporting means into the ground using a reaction force generated in a direction opposite to a direction in which the pressure is applied.

[2] 2. The repair or reinforcement system of claim 1, wherein the separately installed pressure bearing body is a frame assembly, comprising:
bearing members installed a predetermined distance above the existing foundation structure and bearing the pressure of the pressurizing means;
support members each having one end supported to the bearing member and the other end supported to the existing foundation structure; and
anchor members each having one end fixed to the existing foundation structure and the other end fixed to the bearing member, the anchor members being formed between each of the support members.

[3] 3. The repair or reinforcement system of claim 2, wherein jack supporters are further installed between each of the support members and the existing foundation structure and are driven to allow the support members to apply a pressure to the bearing members upwardly as the support members are elongated, and the bearing members restrained to the existing foundation structure by the anchor members are tightly fixed to the existing foundation structure together with the support member by a reaction force of the jack supporters.

[4] 4. The repair or reinforcement system of claim 2, wherein the anchor members are fixed to the bearing members such that one end of each of the anchor members is inserted into a hole for the anchor member in the existing foundation

structure, followed by filling a filler material to be fixed, and the other end of the anchor member upwardly penetrates through the bearing member to be fastened by an anchorage nut.

[5] 5. The repair or reinforcement system of claim 1, wherein the pressurizing means comprises a hydraulic jack or a jack support, and the structure supporting means is continuously pressed fit into the ground by a predetermined length by inserting a pressure bearing plate into the upper end of the pressurizing means and continuously driving the pressurizing means.

[6] 6. A repair or reinforcement method of an existing structure using a reaction force of pressurizing means, comprising:
installing structure supporting means on a ground including an existing foundation structure, the structure supporting means having an upper portion spaced a predetermined distance from the existing structure;
installing pressurizing means at a space formed between the upper portion of the structure supporting means and the existing structure, and driving the pressurizing means to apply a reaction force generated by pressurizing the existing structure by elongation of the pressurizing means to allow the structure supporting means to be pressed fit into the ground; and
completing a necessary repair or reinforcement work when the structure supporting means is continuously pressed fit into the ground to a predetermined depth so as to support the existing structure, the existing structure being a pressure bearing body of generating a reaction force based on the pressurizing means.

[7] 7. A repair or reinforcement method of an existing structure using a reaction force of pressurizing means, comprising:
installing a frame assembly in the vicinity of the existing structure;
forming a hole in an existing foundation structure contacting a ground and inserting the structure supporting means into the hole, the structure supporting means having an upper portion spaced a predetermined distance from the frame assembly;
installing pressurizing means at a space formed between the upper portion of the structure supporting means and the existing structure, and driving the pressurizing means to apply a reaction force generated by pressurizing the existing structure by elongation of the pressurizing means to allow the structure supporting means to be pressed fit into the ground; and

integrally forming the structure supporting means with the existing structure and completing a necessary repair or reinforcement work when the structure supporting means is continuously pressed fit into the ground to a predetermined depth so as to support the existing structure, the frame assembly being a pressure bearing body of generating a reaction force based on the pressurizing means.

[8] 8. The repair or reinforcement method of claim 7, wherein the frame assembly comprises bearing members installed a predetermined distance above the existing foundation structure and bearing the pressure of the pressurizing means, support members each having one end supported to the bearing member and the other end supported to the existing foundation structure, and anchor members each having one end fixed to the existing foundation structure and the other end fixed to the bearing member.

[9] 9. The repair or reinforcement method of claim 8, wherein jack supporters are further installed between each of the support members and the existing foundation structure and are driven to allow the support members to apply a pressure to the bearing members upwardly as the support members are elongated, and the bearing members restrained to the existing foundation structure by the anchor members are tightly fixed to the existing foundation structure together with the support member by a reaction force of the jack supporters.

[10] 10. The repair or reinforcement method of claim 8, wherein the anchor members are fixed to the bearing members such that one end of each of the anchor members is inserted into a hole for the anchor member in the existing foundation structure, followed by filling a filler material to be fixed, and the other end of the anchor member upwardly penetrates through the bearing member to be fastened by an anchorage nut.

[11] 11. The repair or reinforcement system of claim 8, wherein the pressurizing means comprises a hydraulic jack or a jack support, and the structure supporting means is continuously pressed fit into the ground by a predetermined length by inserting a pressure bearing plate into the upper end of the pressurizing means and continuously driving the pressurizing means.